

REMARKS

Claims 1-34 are all the claims pending in the application. This Amendment adds claims 32-34 and addresses each point of rejection raised by the Examiner. Favorable reconsideration is respectfully requested.

Claims 1-31 are rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent 5,872,554 to Chang *et al.* in view of U.S. Patent 6,091,396 to Minami *et al.* Applicant respectfully traverses the grounds of the § 103(a) rejections for the reasons set forth below.

Chang teaches a method of simulating an N-level grayscale image on a black and white LCD display. *See* column 1, lines 17-20; column 2, lines 37-39; Fig. 2. Chang teaches that the prior art accomplished gray scale simulation by dividing gray scale images into multiple pages of black and white images, turning pixels on and off at a high rate to simulate gray, which was perceived as “blinking” by the human eye. *See* column 1, line 32 to column 2, line 13. To lessen this blinking, each pixel of grayscale in Chang corresponds to a sequence of two colored black and white dots on N-1 pages, sequentially and cyclically displayed on the LCD screen. *See* Fig 2; column 2, lines 30-33, 39-51. The pages are organized so that for a given gray scale level, corresponding areas of gray do not all appear white or all appear black at the same time on the N-1 pages. *See* Fig. 2.

Minami teaches a method of reducing “dynamic false contour” when gray scale is simulated on a plasma display panel (PDP) and the image moves across the display. *See* column 2, lines 25-35; column 3, lines 60-63. Minami teaches that the prior art simulates gray by turning pixels on and off at a high speed. *See* column 1, lines 16-37. For each time period that gray is to

be displayed on a picture element, the period is divided into a plurality of “sub-fields”, each sub-field having a respective luminescence time chosen by the power series of 2. *See* column 1, lines 16-22; Fig. 20. Minami teaches to reduce dynamic false contour by having at least one sub-field that deviates from the power series (col. 4, lines 1-4), and modifying the order of the sub-fields for an element when the level of gray changes (col. 4, lines 9-15). Again, the gray values are achieved by operation of a bi-color (black and white) set of imaging devices.

The Examiner asserts that “Chang et al. teach all the claimed limitations recited in claims 1-31 with the exception of providing the output luminance of the cell, the flat panel, and the CIE chromaticity diagram.” The Examiner asserts that these remaining features are taught by Minami, “And the CIE chromacity diagram is a standard diagram that is well [known] in the art and the range of maximum luminance is the standard they use in the military and is also well known in the art.” The Examiner asserts that it would have been obvious to combine Minami and Chang “because this would allow the provision of a gradation display while reducing a dynamic false contour.”

Regarding independent **claim 1**, in Chang, each picture element of a 3 x 3 matrix (Fig. 2) is a single pixel which changes between black and white over time to simulate gray. This does not suggest producing the luminance of each picture element using a series of cells. Moreover, if it is the Examiner’s position that the dots in the series of frames correspond to the series of cells (using time as the orientation of the series, rather than space), then the dots of Chang fail to meet the claim requirement that each cell expresses tones in multiple levels, “each cell of said series of cells emit[ing] light in a same color.” The specification explicitly defines “multiple levels” on

page 8, lines 10-11 as meaning “three or more levels.” *See* MPEP § 2111.01 (“The words of a claim must be given their ‘plain meaning’ **unless** they are defined in the specification”). In comparison, the dots of Chang are only black or white (*i.e.*, two levels).

Additionally, if the Examiner construes a 3 x 3 matrix of cells as corresponding to a picture element, this still does not correct the deficiency that a cell of Applicant’s claim 1 can express multiple levels and emit light of a single color. To the extent different levels are expressed in Chang, the levels correspond to two different colors, black and white. Similarly, the secondary Minami reference describes control of black and white levels. The combination of Minami and Chang does not suggest multiple level and single color aspects of claim 1, nor offer motivation for such modification. Therefore, Applicant asserts that independent claim 1 is patentable, as are **claims 2-12, 24-29, and 32** which depend from claim 1.

Further, regarding **claim 3**, Chang does not suggest arranging the cells according to the inclination of a tone gradient vector of adjacent elements. This feature creates a more uniform luminance gradient from picture element to picture element. For example, if an adjacent picture element on the left is light, and an adjacent picture element on the right is dark, and the series of cells are arranged left to right, then the left most cell would be lightest, and the right most cell would be darkest, the gradient of the cells arranged in accordance with the tone gradient vector.

Regarding independent **claim 13**, Applicant submits that Chang does not suggest the limitation that “at least two of said series of cells having maximum output levels different from each other,” instead teaching only that respective pixels are grayscale. Further, if it is the Examiner’s position that the dots of the N-1 frames of Chang constitute cells, each dot has the

same maximum luminance, which is white, since all dots are either black or white. Chang specifically teaches that respective pages mix black and white dots for a respective level of gray, as compared to Fig. 1 of Chang, such that there is a choice of black or white on every page.

Further, like claim 1, claim 13 requires cells “expressing multiple levels” emitting light “in a same color.” Thus, the remarks offered above regarding “multiple levels” also apply to claim 13.

Accordingly, Applicant submits that independent claim 13 is patentable, as are **claims 14-17 and 33** which depend from claim 13.

Additionally, there is no suggestion of the limitation of **claim 14** that the maximum output level of one of two cells is substantially the same as the output level difference per one level of the other cell. Nor does Chang teach or suggest the monochromatic filter of **claim 17**. Nor does the combination of Chang with Minami suggest any of these features, nor offer motivation for such modification.

Regarding **claim 18**, Applicant asserts that the Examiner has not presented a *prima facie* case for the obviousness of the chromaticity requirements in the claim. The Examiner simply asserts that “the CIE chromaticity diagram is a standard diagram that is well known in the art and the range of maximum luminance is the standard they use in the military and is also well known in the art.”

To establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of

ordinary skill in the art, to modify the reference. *See generally* MPEP §§ 2143, 2143.01. The showing must be clear and particular. “Broad conclusory statements standing alone are not ‘evidence’.” *In re Kotzab*, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) (*citing In re Dembiczak*, 50 USPQ2d 1614, 1617 (Fed Cir. 1999)).

Claim 18 does not merely recite using a CIE chromaticity diagram, but rather, requires the display color to fall within a specific region of such a diagram. Without an objective reason to modify the prior art to satisfy the limitations of claim 18, the mere fact that CIE chromaticity diagrams are individually known in the art is not sufficient to establish a *prima facie* case of obviousness. *See* MPEP § 2143.01

The specification discloses that although there has been demand for blue-base monochromatic imaging in the medical field (*see* page 4, lines 10-21), blue-base flat panel displays are unavailable due to insufficient luminance and range of tones (*see* page 4, line 22 to page 7, lines 17). Claim 18 describes a flat panel display with a blue-base chromaticity desirable for medical imaging

The Examiner’s rejection relies on Chang and Minami, and an assertion that the knowledge necessary to use a chromaticity diagram would have been known in the art at the time. However, even if the knowledge was available, it does not necessarily follow as to why someone would want to make the required modifications to Chang and Minami to achieve the particular chromaticity required in the claim.

As neither Chang nor Minami disclose the required chromaticity, the Examiner must offer reasoning to support what would suggest or motivate one skilled in the art to modify Chang

AMENDMENT UNDER 37 C.F.R. § 1.111
Application No. 09/289,600

and/or Minami to add this feature, without the benefit of hindsight. Without such a showing, a mere conclusory assertion of obviousness does not establish a prima facie case.

The art of record offers no motivation to build a monochrome display in the color as defined in claim 18, absent knowledge of the display improvements and medical application as presented in the present disclosure.

If the Examiner wishes to maintain a rejection based upon personal knowledge regarding the color falling into the claimed region of the CIE chromaticity diagram, Applicant requests that such knowledge be stated as specifically as possible, with whatever factual support the Examiner is able to offer, in an affidavit, in accordance with MPEP § 2144.03.

Accordingly, Applicant submits that independent claim 18 is patentable, as are claims 19-23, 30-31, and 34 which depend from claim 18.

Further, like claims 1 and 13 above, claim 20 requires cells “expressing multiple levels” emitting light “in a same color.” Thus, the remarks offered above regarding “multiple levels” also apply to claim 20.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.111
Application No. 09/289,600

Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,



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AMENDMENT UNDER 37 C.F.R. § 1.111
Application No. 09/289,600

APPENDIX

Version With Markings To Show Changes Made

IN THE CLAIMS:

Claims 32-34 are added.